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The importance of reading in our time is evident. Someone who does not master this skill cannot function properly in our modern society. One of the main tasks of primary education is therefore to teach children to read. The purpose of beginning reading instruction is to help children master the many challenges of the written word including knowledge of the alphabetic system, the ability to decode new words and the ability to determine, integrate and recall the meanings of written words within texts.

This dissertation is concerned with effective reading instruction and the development of early literacy. Early literacy is the phase of literacy occurring after emerging literacy and before advanced literacy. Early literacy encompasses the development of reading from the beginning of kindergarten through the end of grade 1, with two goals standing central: discovery of the alphabetic principle and increased speed of word recognition (Verhoeven & Aarnoutse, 1999). Word recognition can be defined as the process of converting a sequence of letters into sounds for the identification of a word (Coltheart, 1978).

The development of beginning reading and especially word recognition has been widely studied both nationally and internationally. The following factors have been identified as important determinants of early word recognition: phonemic awareness; letter knowledge; rapid automatic naming of letters and digits (Aarnoutse, van Leeuwe, Voeten, & Oud, 2001; Bowers & Swanson, 1991; Hansen & Bowey, 1994; Näslund & Schneider, 1996; National Early Literacy Panel, 2008; Verhoeven & van Leeuwe, 2003; Wagner & Torgesen, 1987). This information, however, does not provide us with an answer to the question of which instructional approach is most suited to stimulate the development of children's early word recognition. Different instructional approaches can be expected to produce different results. And one of the major questions to be addressed — and the starting point for this dissertation — is whether knowledge should be provided by teachers or generated by the learners themselves (Rosenshine, Meister, & Chapman, 1996). Effective instruction would seem to call for a third alternative to overcome this dilemma. This third alternative can be found in the guided co-construction of knowledge (Hardman, 2008; Mercer, 1995; Terwel, van Oers, van Dijk & van den Eeden, 2009; van Schaik, Terwel, & van Oers, 2014). Guided co-construction (GCC) as an instructional approach requires the following core elements: an explicit role for the teacher in whole-class instruction, pupil guidance and the scaffolding of pupil learning; cooperative learning on the part of pupils; and the construction of insight, skill and behaviour by pupils on the basis of their accumulated knowledge and experiences.

In this dissertation, the effects of two instructional approaches on the development of young children's word recognition were compared: a providing approach Direct Instruction (DI) versus an instructional approach which included a cooperative learning component (GCC). DI is a approach for teaching which utilizes carefully planned lessons designed around small learning increments. The instruction is highly structured and describes or even scripts classroom activities in considerable detail. DI has been shown to be an effective instructional approach for teaching children and particularly children at risk for

reading difficulties to read (Adams, 1990; Bus & van IJzendoorn, 1999; Chall, 1996; Ehri, Nunes, Stahl, & Willows, 2001; Hattie, 2008). However, in recent reviews and meta-analyses, Raudenbush (2009) and Slavin, Lake, Chambers, Cheung and Davis (2009) have found other instructional approaches which include a cooperative learning component to be particularly effective for the teaching of early word recognition.

In light of the above, the overarching question for the studies presented in this dissertation became: How does the word recognition of primary school pupils develop during the first grade with a Direct Instruction approach and with a Guided Co-Construction approach and what factors appear to influence the development of the children's word recognition? This overarching question encompassed the following three research questions:

1. Which instructional approach (DI or GCC) more effectively stimulates the development of word recognition in grade 1?
2. Which kindergarten pre-literacy skills appear to be important for the development of children's word recognition?
3. How does the word recognition of first grade pupils develop?

To answer these questions, the development of the word recognition of 178 first grade pupils was examined, in a longitudinal study.

Guided Co-Construction versus Direct Instruction

In the first study (Chapter 2), we determined which form of instruction best stimulates the development of children's early word recognition. A field experiment with a pre-test/post-test control group design was undertaken. Two instructional variants of the reading programme Learning to Read Safely were implemented with separate groups of pupils: DI with the control group and GCC with the experimental group. Teacher training was provided on the different instructional approaches and special materials were developed and supplied to facilitate either the DI or GCC.

The development of the 178 children's word recognition throughout the course of grade 1 was compared to determine which instructional approach was most effective. More specifically, it was asked: Is it better for beginning reading instruction to provide pupils with letter-sound relations and ready-made words (i.e., DI) or scaffold pupil learning by helping them analyze and generate their own letter-sound relations and words in cooperation with both peers and teachers (i.e., GCC)? In addition to this, it was also asked if pupils from minority versus majority socio-cultural backgrounds might benefit differentially from the two instructional approaches.

Drawing on the outcomes of an earlier series of studies (Terwel, van Oers, van Dijk, & van Den Eeden, 2009; van Dijk, van Oers, & Terwel, 2003) it was hypothesized that the word

recognition skills of first grade children who received GCC would exceed the word recognition of those who received DI. It was further hypothesized that the pupils would benefit differently from the two instructional approaches: Minority pupils would benefit more from direct instruction (DI) but majority pupils more from GCC (Leseman & de Jong, 1998).

The results of a repeated measures analysis showed the pupils in the GCC group to outperform the pupils in the DI group. However, these results also showed the differences between the groups to gradually diminish during the course of grade 1 and the pupils in the DI group to almost catch up to the pupils in the GCC group by the end of the school year. In addition, a significant interaction between instructional condition and the socio-cultural background of the pupils was found: The majority pupils indeed benefitted more from GCC while the minority pupils benefitted more from DI. The minority pupils in the control group were found to show the most progress, and closer inspection of the development of the word recognition of the 109 majority pupils separately showed their performance differences between the conditions to be relatively constant throughout the year.

Implementation

In the second study (Chapter 3), the quality of the implementation of the two instructional approaches — DI and GCC — was assessed. The specific research question was whether the two instructional approaches were implemented as intended. That is, did the activities of the pupils and teachers in the DI group show more characteristics of DI than the activities of the pupils and teachers in the GCC group? And conversely, did the activities of the pupils and teachers in the GCC group show more GCC characteristics than the activities of the pupils and teachers in the DI Group? To answer the research question, we carefully described the implementation process for the two instructional; systematically collected time-sampled observational data from the DI and GCC groups; and compared the quality of implementation for the two groups. The sums of the systematic time-sampled observations for the pupil and teacher activities in the DI and GCC conditions were then calculated and found to differ as expected: The instructional approaches were implemented as intended.

Prediction of word recognition

The third study (Chapter 4) was undertaken to examine the prediction of the children's word recognition. Among the cognitive prerequisites for learning to read (Adams, 1990; Verhagen, 2009) are phonemic awareness (Aarnoutse, 2004), letter knowledge as a basis for understanding the alphabetic principle (Bowey, 2005) and naming speed (Verhagen, 2009). The specific research question in this third study was therefore: Is there an effect of phonemic awareness, letter knowledge and naming speed in kindergarten on children's word recognition after six month of reading instruction in grade 1?

The results showed all of the kindergarten pre-reading skills to indeed play a role in the children's later speed of word recognition. When the background variables were subsequently entered into a hierarchical regression analysis and the nested nature of the cases controlled for with the addition of 'classes' as fixed effects, the resulting model explained 53% of the variance in word recognition. Letter knowledge and naming speed for digits in kindergarten showed significant direct effects on the children's word recognition, moreover.

In order, to quickly detect stagnation in the development of children's word recognition skills, it is recommend to measure letter knowledge, and naming speed for digits at the end of the kindergarten period. Such information enables us to to identify young children at risk for reading problems

Development of word recognition

In the fourth and final study (Chapter 5), the development of the children's word recognition during the course of first grade was examined. Children with different levels of ability can be expected to show different patterns of reading performance over time (e.g., Stanovich, 1986; Williamson, Appelbaum, & Enpanchin, 1991). The specific research questions in this fourth study were as follows: How does word recognition develop during grade 1? How does word recognition develop during grade 1, for pupils initially classified as poor versus non-poor readers? And are pupils tied to one category, i.e. poor reader or non-poor reader, during grade 1?

The results of this study showed the development of word recognition in grade 1 to be roughly linear and the poor and non-poor readers to show parallel patterns of development in their word recognition. Nevertheless, the pupils did not remain tied to their initial classification as a 'poor' or 'non-poor' reader at the beginning of grade 1: About 40% of the poor readers identified in November managed to become non-poor readers by May of the same school year while about 10% of the non-poor readers identified in November had become poor readers in May.

Suggestions for future research

In this dissertation, word recognition was chosen as the most important variable for assessing the effects of alternative approaches to early reading instruction (i.e., DI versus GCC). Other variables — such as vocabulary, reading comprehension and reading motivation — should also be examined in future research. In addition, variables such as listening to others and trying to understand the perspectives of others might be examined as also relevant to assess the effects of DI and GCC (Ivey, 1994).

The speed and accuracy of word recognition are commonly distinguished (Verhagen, 2009). In the studies presented in this dissertation, only the speed of the children's word recognition was measured. This was done because speed of recognition has been found to be the main problem encountered by children having difficulties learning to read. In future research, both the speed and accuracy of children's word recognition should nevertheless be examined as these are known to interact and relate differently over time (Verhagen, 2009).

Finally, additional research is needed to improve reading instruction and further stimulate the development of children's word recognition. Among the topics which should be addressed are the prevention of reading problems, the fostering of reading motivation, the implementation of particularly effective reading programmes and effective teacher skills.

Implications for educational practice

The results of this dissertation have some important implications for both the stimulation of reading development and prevention of stagnation. The results of the first two studies showed both DI and GCC to be feasible approaches for the teaching of beginning reading in real classroom settings. Overall, GCC was found to be most effective for the stimulation of word recognition. However, this effect faded during the second half of first grade. In addition, an interaction effect was found. Majority pupils benefited more from a GCC approach, while minority pupils profited more from DI. Therefore, it can be recommended to apply GCC as a teaching-learning strategy for beginning reading during the first half of the year. However, during this period, special attention should be given to minority pupils.

Also on the basis of the present results, it is recommended that educational practice consider measurement of letter knowledge and naming speed for digits at the end of the kindergarten period. Such measurement can alert us to stagnation in the development of a child's early word recognition skills and allow us to initiate early intervention aimed at the prevention of further delay.

The present results show the devotion of sufficient time to reading instruction during grade 1 is important. Additional time for pupils identified as poor readers is also beneficial and therefore called for.

To conclude, the fourth and final study in this dissertation showed those children who were initially categorized as poor readers to not necessarily remain poor readers; unfortunately, some 10% of the children initially categorized as non-poor readers did not remain this and had thus become poor readers by the end of first grade. When a teacher sticks to the initial classification of a child at the start of grade 1 for the remainder of the school year, some pupils will thus not receive the attention which they need and deserve. In order to overcome this obstacle, it is thus important that word recognition skills be frequently measured

and appropriate action be taken depending on the outcome. Frequent measurement is important in not just grade 1 but also in the subsequent grades of primary school.